Expectative management of fetal leg and amnion prolapse due to uterine dehiscence

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Abstract: BACKGROUND Uterine dehiscence is a rare but potentially severe obstetric complication for both mother and child. In most cases of uterine dehiscence, there is a previous history of caesarean section (1-3). However, studies show that any operation on the uterus raises the risk of later uterine (scar) dehiscence or even uterine rupture during pregnancy. The risk of uterine scar dehiscence following prior uterine incision is estimated to be 4-5% (4-6), the risk of uterine rupture 0.5-0.8% (7). In terms of risk of dehiscence, the location of the scar (upper versus lower uterine segment) and the thinning of the uterine wall $<$ 3.5 mm (measured by ultrasound) are important risk factors (1, 5). Studies have demonstrated that there is a correlation between the thickness of the lower uterine segment at 37 weeks of gestation and the associated risk for uterine dehiscence or rupture during labor. Importantly, uterine dehiscence does not involve the fetal membranes or the uterine serosa. Uterine dehiscence mostly occurs at the end of the second trimester. Diagnosis is often made by ultrasound and can be confirmed and further specified by magnetic resonance imaging (MRI) without any radiation exposure of the fetus.

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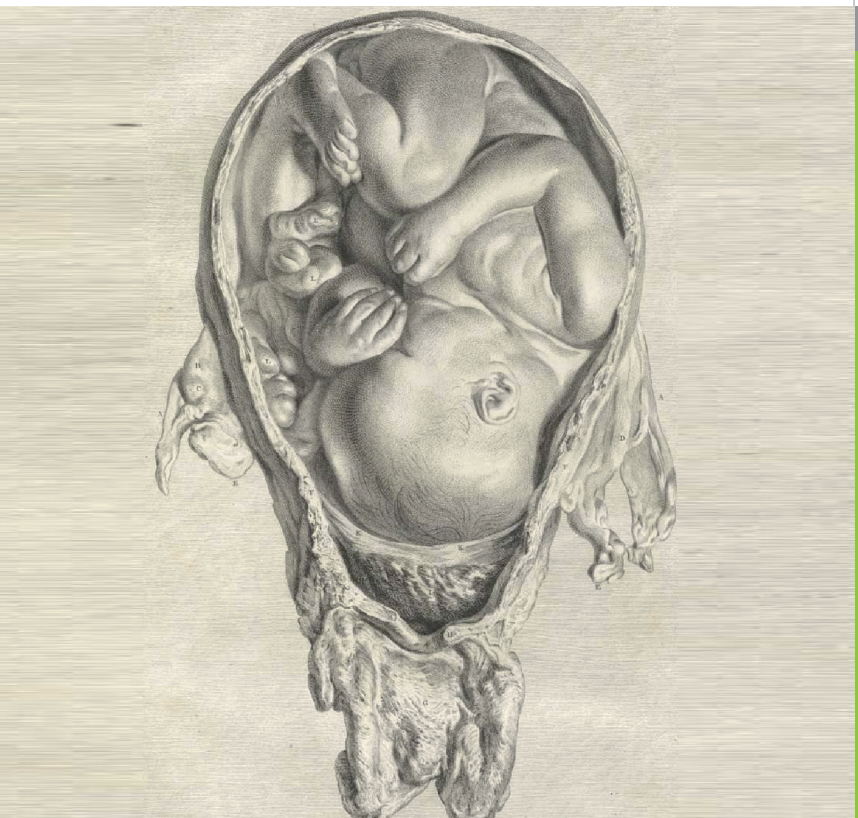
Expectative management of fetal leg and amnion prolapse due to uterine dehiscence



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Uterine dehiscence is a rare but potentially severe obstetric complication for both mother and child. In most cases of uterine dehiscence, there is a previous history of caesarean section (1-3). However, studies show that any operation on the uterus raises the risk of later uterine (scar) dehiscence or even uterine rupture during pregnancy. The risk of uterine scar dehiscence following prior uterine incision is estimated to be 4-5% (4-6), the risk of uterine rupture 0.5-0.8% (7). In terms of risk of dehiscence, the location of the scar (upper versus lower uterine segment) and the thinning of the uterine wall < 3.5 mm (measured by ultrasound) are important risk factors (1, 5). Studies have demonstrated that there is a correlation between the thickness of the lower uterine segment at 37 weeks of gestation and the associated risk for uterine dehiscence or rupture during labor. Importantly, uterine dehiscence does not involve the fetal membranes or the uterine serosa.

Uterine dehiscence mostly occurs at the end of the second trimester. Diagnosis is often made by ultrasound and can be confirmed and further specified by magnetic resonance imaging (MRI) without any radiation exposure of the fetus.

We present the case of a preterm girl born at 29 3/7 weeks of gestation to a 27-year-old G1 Caucasian mother. The mother had a history of endometriosis, diagnosed three years earlier during an appendectomy. Two years prior to this pregnancy, the mother underwent diagnostic laparoscopy with chromopertubation during which perforation of the uterine fundus occurred at the angle of insertion of the right fallopian tube. This lesion was treated by electrocoagulation.

At 26 1/7 weeks of gestation, an ultrasound examination revealed oligohydramnion and uterine dehiscence with peritoneal herniation of the fetal membranes through a uterine gap of 12 mm localized in the right fundal area (Fig. 1). This finding was confirmed by MRI (Fig. 2). The mother mentioned a short episode of strong pain in the right upper quadrant of the abdomen that had occurred four weeks prior to admission. Following the diagnosis, the benefits and potential risks of immediate delivery were discussed at an interdisciplinary meeting. A plan for expectative management was carried out taking into consideration the very early gestational age and the fact that the mother was asymptomatic.

The mother was hospitalized, placed on bed rest and closely followed by a team of obstetricians. Intravenous tocolysis was administered to the mother to avoid any contractions of the uterus and fetal lung maturation was induced.

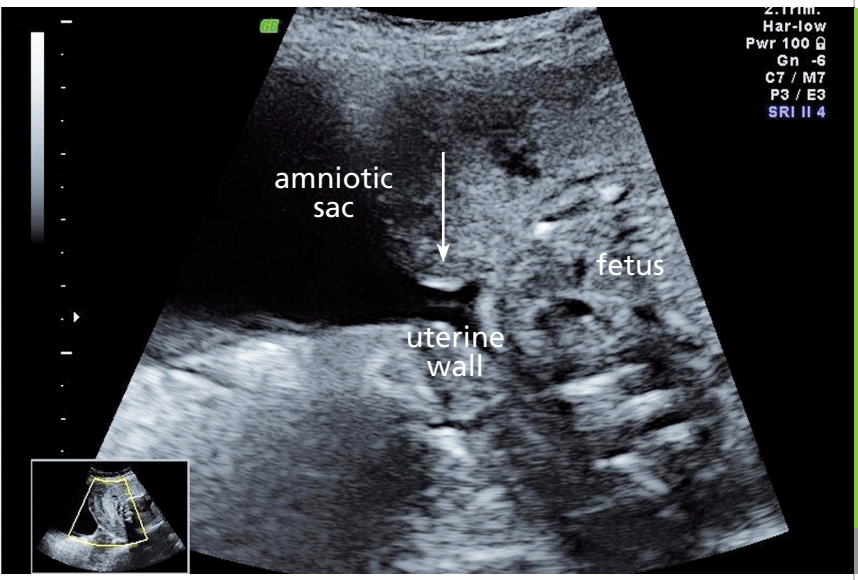

Fig. 1

Ultrasound at 26 weeks of gestation with diagnosis of uterine dehiscence (arrow).

At 28 0/7 weeks of gestation the fetus stretched the left arm into the intraperitoneal amniotic sac. Adequate circulation of the arm was documented by Doppler ultrasound of the radial artery, absent skin oedema and normal finger movements. At 29 0/7 weeks of gestation, the left leg was extended through the 39 mm gap (Fig. 3) allowing a normal quantity of amniotic fluid to accumulate within the uterine cavity. Sufficient perfusion of the leg was confirmed by Doppler ultrasound examinations. Three days later, the mother developed contractions that persisted despite maximum tocolysis. A Cesarean section was performed. Rupture of membranes occurred during Caesarean section and the baby was delivered from a cephalic presentation. Intraoperatively, the uterine defect was located at the right uterine fundus and measured 4 cm. It contained part of the placenta and fetal membranes (Fig. 4). The defect was sewed in two layers.

The Apgar scores were 4, 7, 8 at 1, 5, 10 minutes, respectively. Arterial cord-pH was 7.13. Due to bradycardia and insufficient breathing initial bag and mask ventilation was needed. The baby was placed on nasal CPAP and transferred to the NICU. The birth weight (1410 g), length and head circumference were within normal limits. On clinical examination, the entire left leg including the foot was edematous and discolored with deep furrows in the region of the upper thigh and groin (Fig. 5, 6). The area in the groin appeared to be necrotic. Capillary refill was prolonged and distal

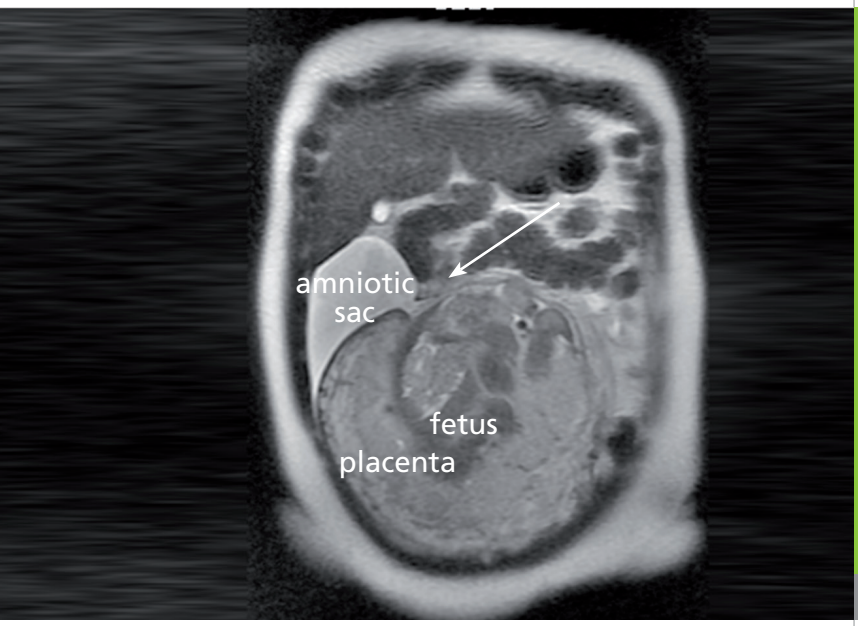

Fig. 2

Confirmation of diagnosis on MRI (arrow).

pulses were not palpable. No spontaneous movement of the leg was observed und muscle tone was reduced. However, the swelling and signs of venous and lymphatic stasis in the left leg improved rapidly. No skin necrosis occurred (Fig. 7, 8). Movements of the leg became normal and similar to that of the right leg.

Nasal CPAP was stopped on day 17, but an oxygen requirement persisted until day 40 of life. Apnea and bradycardia due to prematurity were treated with caffeine citrate from day 4 until day 45. Intermittent phototherapy was needed due to hyperbilirubinemia. Enteral feeds were well tolerated and tube feedings were discontinued on day 50. There were no signs of infection. Cerebral, kidney and heart ultrasound were normal. Eye examinations did not show any signs of retinopathy of prematurity and a hearing screening prior to discharge was normal. The baby was discharged at 8 weeks of age, i.e. at a corrected age of 37 1/7 weeks.

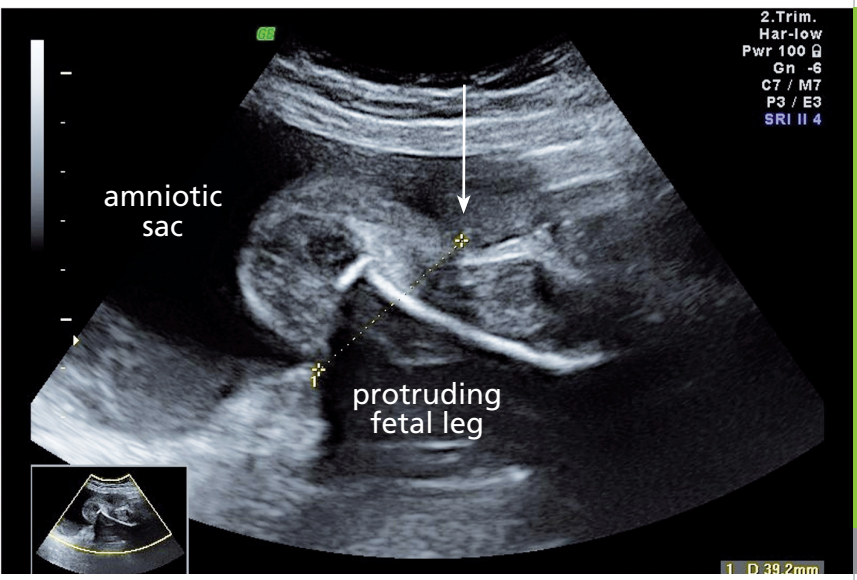

Fig. 3

Ultrasound at 29 weeks of gestation showing increase in diameter of uterine defect (arrow) with extension of a fetal leg through the defect.

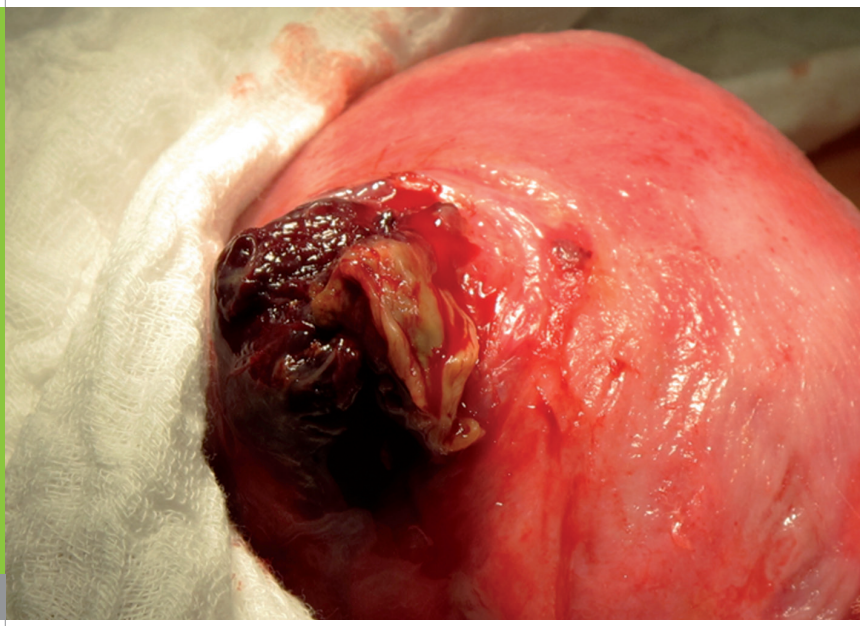

Fig. 4

Uterine dehiscence on Cesarean section.

Fig. 5

Examination at birth: edematous left leg with deep furrows in region of groin and upper thigh.

Fig. 6

Edematous left leg.

Fig. 7

Examination of leg on Day 14: no edema, furrows still visible, crust in groin.

Fig. 8

Examination of leg on Day 14: no edema, furrows still visible, crust in groin.

Uterine dehiscence is defined as a defect in the uterine musculature in which the serosa of the uterus remains intact and hemorrhage is absent. Most commonly, dehiscence is an occult scar separation that is diagnosed at the time of laparotomy in a woman with a previous Cesarean section. Uterine rupture is defined as a disruption of all uterine layers with hemorrhage, fetal distress, stillbirth and significant maternal morbidity and potential mortality. The most common cause for uterine rupture is previous uterine dehiscence.

The incidence of uterine dehiscence diagnosed at the time of scheduled Cesarean section in asymptomatic patients with a history of classical and lower segment Cesarean section is 2.5% and 0.3%, respectively (8). This suggests that pregnancies with uterine dehiscence may be carried safely to term.

However, as soon as a uterine scar dehiscence is detected during pregnancy, the question of how to continue the pregnancy must be addressed. Factors to be considered are maternal symptoms, the location and size of the dehiscence, the risk for uterine rupture and the location of the placenta with the risk of severe bleeding. Fetal factors strongly depend on the week of gestation and the expected neonatal risks in case of prematurity compared to the intrauterine risks of continuing the pregnancy. These might include herniation of fetal body parts through the herniation site, early rupture of membranes, and cord complications at the herniation site.

CONCLUSION

Uterine dehiscence is a severe complication following previous Cesarean section or previous uterine surgery. At low gestational ages, expectative management with close monitoring of mother and child is justified. However, in case of enlargement of the dehiscence and fetal distress, Cesarean section is inevitable. In the presented case, continuous monitoring of mother and child allowed the pregnancy to be prolonged by 23 days, thus lowering the risk of morbidity and mortality for the fetus.

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